



## Civil Engineering Graduate Program Doctoral Candidacy Requirements

The University of Calgary [Graduate Candidacy Regulations](#) (“the Regulations”) govern the conduct of admission to graduate candidacy at the University of Calgary. This document establishes program-specific requirements associated with the conduct of admission to graduate candidacy in Civil Engineering under the *Regulations*.

### A. Statement of Purpose

Admission to candidacy in the Civil Engineering Graduate Program will ensure that students have a fundamental knowledge and understanding of Civil Engineering relevant to their particular field of research.

It requires doctoral students to

- critically think about their research project,
- develop one or more research questions that are adequate for a doctoral research project,
- evaluate the merit of the research project in the context of existing knowledge in related fields,
- prepare a thorough plan for their thesis research,
- have the necessary technical skills and background preparation to complete the planned research,
- communicate technical concepts in both a written and oral medium.

### B. Components of the Candidacy Requirements

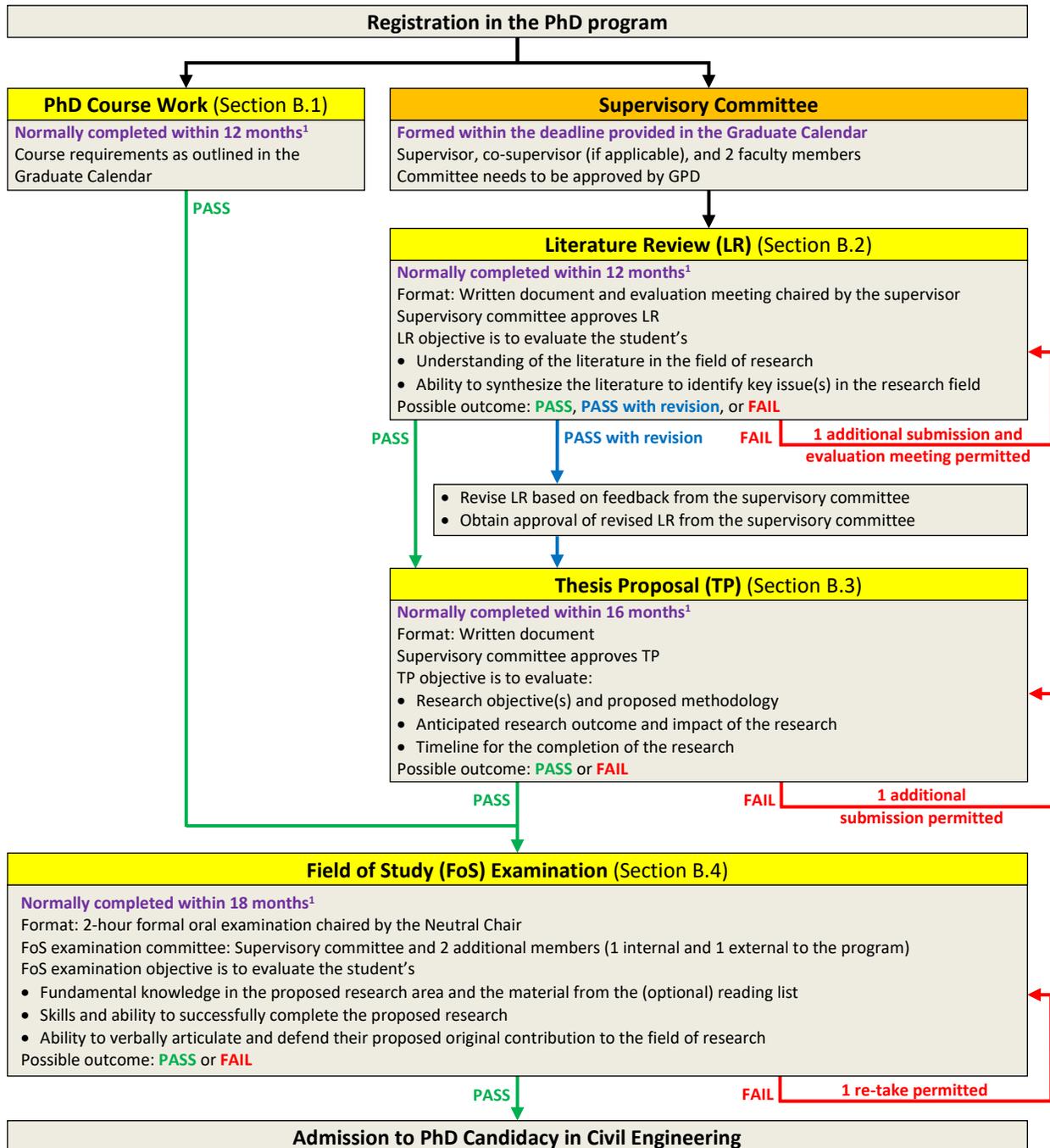
All doctoral students in the Civil Engineering Graduate Program must successfully complete the following components:

1. all course requirements,
2. a written literature review (LR) in the student’s field of research,
3. a written thesis proposal (TP),
4. a field of study (FoS) oral examination.

A flowchart describing the typical path and timeline for the candidacy process is provided in Figure 1 on the next page of this document.

The supervisor must form, in consultation with the doctoral student, a [supervisory committee](#) within the deadline provided in the Graduate Calendar. The doctoral student and the supervisory committee normally meet within the second term of the student’s program, but not more than 9 months after beginning the student’s program.

## Civil Engineering Graduate Program Doctoral Candidacy Requirements



<sup>1</sup> from commencement of the student's PhD program

**Figure 1: Timeline for the doctoral candidacy process in Civil Engineering**

Approved by Department of Civil Engineering: 16 October 2019

Approved by FGS Policy Committee: 4 December 2019

Effective Date: 1 January 2020



## Civil Engineering Graduate Program Doctoral Candidacy Requirements

### B.1 Course Requirements

All course requirements are normally completed within 12 months from the commencement of the PhD program and must be completed before the FoS examination can be scheduled. The program requirements are listed in the [FGS Academic Calendar](#). Students may choose to complete courses at any point from admission into the program until the scheduled FoS examination.

### B.2 Literature Review (LR)

#### a) *Objective*

Students in the Civil Engineering Graduate Program must complete a literature review in their field of research. The literature review is normally completed within 12 months from the commencement of the PhD program. The objective of the literature review is to launch the student's research agenda by providing a description and critical analysis of the most significant studies conducted in the field of research and begin the exploration of research questions. The literature review should demonstrate the student's

1. understanding of the literature in the field of research,
2. ability to synthesize and assess the literature in the field of research,
3. ability to identify key issue(s) in the field of research.

If the research covers more than one field, the literature review should present the literature in the relevant fields and indicate how they are related to the research question(s). The literature review will serve as a bridging document toward the thesis proposal by laying the groundwork for the dissertation research question(s).

#### b) *Format*

The written literature review should be presented in a scholarly format and have the following formatting style:

- Page size: Letter size (8.5 inches x 11 inches)
- Margins: 1 inch (2.54cm) on each side
- Line spacing: 1.5 spaced
- Font: Calibri or Times New Roman, 11pt, black
- Page numbers: Number all pages with lower case Arabic numerals except the title page
- Length: maximum of 30 pages excluding references, tables, and figures

#### c) *Evaluation*

The literature review shall be evaluated by the supervisory committee within three weeks after receiving the document. A supervisory committee meeting chaired by the supervisor must be scheduled with the student for the decision on the literature review. At the beginning of the evaluation meeting, the student will give a presentation of maximum 20 minutes to highlight the most important studies presented in the literature review and how they lead to original research questions. The supervisory committee members will ask questions to evaluate if the student understands and can critically discuss the content of the literature review.

## Civil Engineering Graduate Program Doctoral Candidacy Requirements

At the end of the supervisory committee meeting, the committee will make a decision based on the following three options:

- **Pass** means that the student has demonstrated a satisfactory understanding of the literature in the student's research field and that the literature review is sound and meets the quality and formatting requirements.
- **Pass with revision** means that the student must add omitted work or complete some corrections to the literature review identified during the supervisory committee meeting.
- **Fail** means that the student is unable to demonstrate satisfactory understanding of the literature in the field of research and communicate it effectively.

The supervisory committee's recommendation to the Graduate Program Director<sup>2</sup> will be

- a **Pass of the literature review** if the final vote is a unanimous **Pass**,
- a **Pass with revision** if the final vote consists of at least one **Pass with revision**, but no **Fail**,
- a **Failed literature review** if the final vote includes at least one **Fail**.

The supervisory committee members will provide constructive feedback on how to improve the literature review. Written feedback is required in the case of a failed literature review.

### d) **Appeal of a Failed Literature Review**

In the case of a failed literature review, the student has the right to appeal the decision to the Faculty of Graduate Studies. Procedures for appeal are described in the Graduate Calendar under [Academic Regulations](#).

### e) **Pass with Revision**

In the case of a **Pass with revision**, the student must revise the literature review and provide an itemized list of how the comments from the supervisory committee have been addressed. The supervisor will coordinate the review process, and approval of the revised literature review from each member of the supervisory committee is required to pass the literature review within four weeks of the evaluation meeting. Another supervisory committee meeting is not necessary to obtain approval of the revised literature review.

### f) **Failed Literature Review**

In the case of a failed literature review, the student will be given two to six months to thoroughly revise the literature review before another evaluation meeting with the supervisory committee is scheduled.

In the case of a second failed literature review, the student will be asked to withdraw from the program.

## Civil Engineering Graduate Program Doctoral Candidacy Requirements

### B.3 Thesis Proposal (TP)

The thesis proposal is a key element of the candidacy requirements. It is submitted by the student after the literature review has been passed. The thesis proposal is normally completed within 16 months from the commencement of the PhD program

#### a) *Objective*

The objective of the written thesis proposal is to allow the student to clearly communicate - their research plan to the supervisory committee. The thesis proposal should:

- state and explain clearly the research objective(s),
- describe in detail the proposed methodology,
- describe the significance, originality, and the anticipated outcome and impact of the research,
- include a brief summary of the accomplishments to date (if applicable),
- propose a timeline for the completion of the research.

#### b) *Format*

The written thesis proposal has the same formatting style as the literature review except the maximum length is 10 pages excluding references, tables, and figures. Students are recommended to address the following six elements in the thesis proposal:

1. Problem definition
2. Research question(s) and objectives
3. Methodology
4. Potential contribution
5. Preliminary results (if any)
6. Research plan (milestones, timeline)

#### c) *Evaluation*

The supervisory committee will evaluate the submitted thesis proposal and make a decision based on the following two options:

- **Pass** means that the student has proposed a sound, feasible research plan that is likely to answer the research questions posed, and that will advance knowledge in the Civil Engineering field of specialization.
- **Fail** means that the student is unable to clearly articulate and justify the proposed research to the supervisory committee and that the research plan and expected results lack the original contribution expected in a PhD research.

Recommendation of the members of the supervisory committee must be a unanimous **Pass** to approve the thesis proposal. A lack of unanimity results in a failed thesis proposal. In the case of a failed thesis proposal, the supervisory committee will provide written feedback on how to improve the thesis proposal.

#### d) *Appeal of Thesis Proposal*

In the case of a failed thesis proposal, the student has the right to appeal the decision to the FGS. Procedures for appeal are described in the Graduate Calendar under [Academic Regulations](#).

## Civil Engineering Graduate Program Doctoral Candidacy Requirements

### e) Re-submission of Thesis Proposal

In the case of a failed thesis proposal, the student will be given two to six months to thoroughly revise and re-submit the thesis proposal for evaluation by the supervisory committee.

In the case of a second failed thesis proposal, the student will be asked to withdraw from the graduate program.

### B.4 Field of Study (FoS) Examination

PhD students in the Civil Engineering Graduate Program must complete an FoS oral examination to be evaluated by the FoS examination committee. The FoS examination is normally completed within 18 months from the commencement of the PhD program.

#### a) *Objective*

The objective of the FoS examination is to evaluate the student's:

- fundamental knowledge in the proposed research area,
- skills and ability to successfully complete the proposed research,
- ability to verbally articulate and defend their proposed original contribution to the field of research.

#### b) *Composition of the FoS Examination Committee*

The FoS examination committee consists of:

- all members of the student's supervisory committee (including a co-supervisor if applicable),
- one internal examiner from within the student's program,
- one examiner external to student's program and within the university.

The internal and external examiners will be selected based on their expertise in the student's area of research and cannot have collaborated with the supervisor, co-supervisor, and the student over the last five years.

A Neutral Chair, who is a member of the academic staff appointed by the Graduate Program Director<sup>2</sup>, chairs the examination. The Neutral Chair is non-voting.

#### c) *Scheduling the FoS Examination*

After acceptance of the literature review and thesis proposal by the supervisory committee, the supervisor, in agreement with the student, shall determine the internal and external members of the FoS examination committee. The supervisor shall request scheduling of the FoS examination in writing to the Graduate Program Administrator in Civil Engineering at least five weeks before the proposed date of the FoS examination. This request includes the list of proposed members of the FoS examination committee and the date and time of the proposed FoS examination.



## Civil Engineering Graduate Program Doctoral Candidacy Requirements

The supervisor shall send a copy of the approved student's literature evaluation and thesis proposal to all members of the FoS examination committee at least three weeks before the FoS examination. The Graduate Program Administrator informs the FoS examination committee and the student in writing of the approval of the scheduled FoS examination.

### **d) *Format***

Questioning at the FoS examination is primarily based on the approved thesis proposal and an optional reading list. The reading list can include references of articles and sections of textbooks already incorporated in the student's literature review and thesis proposal, along with additional references related to the student's field of research that are deemed important. After consultation with the student and the student's supervisor, each member of the FoS examination committee may suggest material for the reading list that is equivalent to a maximum of three scientific papers. It is the responsibility of the supervisor to compile the suggested reading material to the reading list and submit the list to the student. The student shall be allowed one month after receiving the reading list to prepare for the FoS oral examination.

The FoS oral examination may be preceded by a separate, non-evaluated public seminar, which will not include any questioning by members of the FoS examination committee. If no public seminar preceded the FoS examination, the student may be offered an opportunity to give a brief (15 minute) presentation summarizing the literature review and thesis proposal in addition to the two-hour examination time.

The format of the FoS examination is oral and public. No one other than members of the FoS examination committee are allowed to question the student. The FoS examination will include at least two rounds of questions by members of the FoS examination committee in the order indicated by the neutral chair at the beginning of the exam. The supervisor is allowed to question the student and is a voting member of the FoS examination committee. The FoS examination should not exceed two hours. This does not include the deliberation time of the FoS examination committee.

Questions should be designed to focus on details and background related to the approved thesis proposal and the reading list. They should be clearly and succinctly formulated. The student should be given reasonable time to answer. If the student has understood the question and cannot answer, the examiner should pass to another question and not attempt to extract an answer by prolonged interrogation, or by leading the student. The neutral chair should guard against any tendency of examiners to interact with each other instead of concentrating on the examination of the student. The neutral chair must stop the exam if one of the examiners needs to leave the room and will reconvene the exam when all examiners are present.

At the end of the FoS examination, the student is asked to withdraw from the examination room. Before any discussion of the student's performance, each examiner must identify which recommendation he/she favors. This provides the FoS examination committee with a frame of opinion on which to base a discussion of the student's performance.

## Civil Engineering Graduate Program Doctoral Candidacy Requirements

### e) *Evaluation*

At the end of the FoS examination, the FoS examination committee will make a decision based on the following two options:

- **Pass** means that the student has adequate knowledge and skills to conduct the proposed research in Civil Engineering.
- **Fail** means that the student has significant gaps in the required knowledge and skills to conduct the proposed research. A re-examination is required to establish attainment of the required knowledge and skills.

Every effort should be made to reach a unanimous recommendation. If the outcome of the final vote includes no more than one **Fail**, the student will pass the FoS examination and advance to the category of “Candidate for the PhD” in the Graduate Program of Civil Engineering.

If the outcome of the final vote includes two or more **Fail**, the FoS examination committee’s recommendation to the Graduate Program Director<sup>2</sup> will be **Fail**. In such a case,

- The neutral chair must inform the student of the FoS examination committee’s recommendation immediately following the vote of the FoS examination committee.
- The examiners write brief memos to the Graduate Program Director<sup>2</sup> explaining the reasons for their vote and submit them within five working days from the date of the FoS examination.
- The Graduate Program Director<sup>2</sup> may uphold the **Fail** in the case of a clear fail or refer to FGS for decision in the case of an unclear fail. If the Graduate Program Director<sup>2</sup> upholds the fail, after consultation with the supervisor, the Graduate Program Director<sup>2</sup> then summarizes the essential points from the memos to the student, copied to the supervisor and FGS. The memos must be sent within five days from the date the fail was upheld.
- The Graduate Program must send the Notice of a Failed Candidacy Component to the student within ten working days from the date of the examination. The Notice and the post-exam memos must be kept on the student’s file. If there is an appeal, the Notice and supporting documents must be submitted to FGS (gpoform@ucalgary.ca).

### f) *Appeal to a Failed FoS Oral Examination*

In the case of a failed FoS examination, the student has the right to appeal the decision to the Faculty of Graduate Studies. Procedures for appeal are described in the Graduate Calendar under [Academic Regulations](#).

### g) *Re-take the FoS Examination*

Only one re-take of the FoS exam will be permitted. The re-take must take place no sooner than two months and no later than six months from the date of the first examination. Normally, the composition of the committee will remain the same.

In the case of a second failed FoS examination, the student is withdrawn from the graduate program.



## **Civil Engineering Graduate Program Doctoral Candidacy Requirements**

### **C. Transfer from MSc to PhD program**

For students who transfer from the MSc program to the PhD program, the candidacy time period requirements will begin the day that the student began the MSc program plus an extra 8 months. Students wishing to transfer from the MSc to the PhD program should discuss how to complete the PhD candidacy requirements, as specified in this document, with the Graduate Program Director and their supervisor.

### **D. Extension of Candidacy Requirements Deadline**

Students who do not complete their candidacy requirements by the end of their 28<sup>th</sup> month in program, or 36<sup>th</sup> month if transferred from a Master's program, for any reason must have an extension request approved by FGS. When requesting an extension, the student and supervisor shall discuss a plan with proposed deadline to complete all the candidacy requirements. The extension request form should be completed with an explanation for the reason for the delay and a proposed plan for completion of the requirements. This form must be signed by the student's supervisor and the Graduate Program Director before being submitted to FGS for approval.

<sup>2</sup> Note: In instance of a potential of a conflict of interest such as when the Graduate Program Director (GPD) is a member of the examining committee, the Department Head/Faculty Dean or a designate will substitute for the GPD.